8.3 *Voiceband Signal Power - Network Control Signals*

_____ a) Are signal power measurements made at minimum and maximum loop currents?

8.4 *DC Conditions for Through Transmission*

NOTE: In this instance, this question is used to determine whether the laboratory's own loop simulator circuit meets the requirements specified in Part 68 Fig. 68.3.

_____ a) Can it be demonstrated that the laboratory's loop simulator circuit contains a continuously variable resistance of 400 to 1740 Ohms for loop start applications and 400 to 2450 Ohms for ground start applications?

8.5 intentionally left blank

8.6 *Voiceband Signal Power - Data*

_____ a) For programmed data equipment, are signal power measurements made with each value of programming resistor; i.e., 0, 150, 336, 569, 866, 1240, 1780, 2520, 3610, 5490, 9200, 19800 Ohms and open circuit?

8.7 *Voiceband Signal Power - Data Protective Circuitry*

_____ a) For EUT's equipped with a programmable jack configuration, are measurements made for all values of the programming resistor?

8.8 intentionally left blank

8.9 intentionally left blank

8.10 intentionally left blank

8.11 *Return Loss - 2-Wire*

_____ a) Is a reference network comprising a 600-Ohm resistor in series with a 2.16μF capacitor available?

8.12 intentionally left blank

8.13 intentionally left blank

8.14 intentionally left blank

8.15 *Signal Power 3995 Hz to 4005 Hz*

_____ a) Is a 10 Hz bandpass filter having the following characteristics: input impedance >100 kOhms; bandpass 3995 Hz to 4005 Hz, cutoff frequencies at the 3 dB points; and out-of-band rolloff >24 dB per octave available?

8.16 *Voiceband Longitudinal Voltage 0.1 kHz to 4 kHz*

_____ a) Is an appropriate weighting filter as described in Fig. 68.308(a) of Part 68 used for this measurement?

_____ b) Is the 600-Ohm metallic/500-Ohm longitudinal termination available for this measurement?

_____ c) Is a true rms voltmeter capable of averaging over 0.1 second available for making this measurement?

_____ d) Is the ±3.1 dB voltage divider effect correction applied to the raw measurement before submitting application?

8.17 *Non-LADC Metallic Voltage 4 kHz to 6 MHz*

_____ a) Are the resistive terminations of 300 and 135 Ohms available for these measurements?

8.18 *Non-LADC Longitudinal Voltage 4 kHz to 6 MHz*

_____ a) Are the resistive terminations for 300 Ohms metallic/500 Ohms longitudinal and 135 Ohms metallic/90 Ohms longitudinal available for these measurements?

_____ b) Is the +1.4 dB correction for the voltage divider effect applied to the raw data prior to submitting the application (4 kHz to 12 kHz)?

_____ c) Is the +4 dB correction for the voltage divider effect applied to the raw data prior to submitting the application (12 kHz to 6 MHz)?

8.19 intentionally left blank

8.20 intentionally left blank

9 LONGITUDINAL BALANCE

9.1 *Analog*

NOTE: Items 9.1.1, 2, 3, 4, and 7 are also applicable to the *Digital* section.

_____ a) Is EUT properly configured, i.e., all normal ground paths connected tot he ground plane, such as ac power ground, water pipe ground, metallic exposed surface, connections to other equipment through which ground may be introduced?

_____ b) Is all test equipment, i.e., battery feed supply (if require), connecting cables, etc. as well as the 600-Ohm or other termination included in the bridge calibration procedure?

_____ c) Are all balance measurements made with T&R normal and T&R transposed?

_____ d) Is ground plane of sufficient area (50% greater than EUT "footprint") on which to rest ungrounded EUT available?

_____ e) Are off-hook measurements made with more than one magnitude of loop current?

_____ f) In the voice frequency band, can the bridge be balanced to 80 dB for 200 to 1000 Hz and 60 dB for 1000 to 4000 Hz?

_____ g) If an IEEE (L-M) method bridge is used, is EUT impedance measured to determine proper magnitude of correction factor to be applied to the measurement before submitting application?

_____ h) Is this correction factor -3 dB for the voice band (@ 600 Ohms)?

9.2 *Digital*

_____ a) Can the M-L (FCC) method digital L.B. bridge be calibrated to 55 dB balance?

_____ b) If an IEEE (L-M) method bridge is used, can the bridge be calibrated to exceed 55 dB, enough to account for the large conversion factors required?

_____ c) Is balance measurement performed on both pairs?

10 ON HOOK IMPEDANCE LIMITATIONS

10.1 *DC Resistance*

_____ a) If EUT is externally powered, are dc resistance measurements made in both, the powered and unpowered states?

_____ b) Are measurements made at least at 10, 20, 50, 100 and 200 Volts?

_____ c) Are these measurements made for both polarities?

_____ d) Are measurements also made from Tip to Ground and Ring to Ground for several voltages and both polarities?

_____ e) Is internal resistance of measuring equipment taken into account?

10.2 *DC Current During Ringing*

_____ a) Is dc voltage 56.5 volts?

_____ b) Are measurements made at the lowest, highest, and one or more intermediate ringing frequencies for the particular ringing type (three intermediate frequencies for "B" type ringers)?

_____ c) Are measurements made at least at the lowest and highest ac voltage at each frequency for the particular ringing type?

_____ d) Are measurements in "10.2.1" and "10.2.2" above also made with the Tip and Ring transposed?

10.3 *AC Impedance During Ringing*

_____ a) Is dc voltage 56.5 volts?

_____ b) Are measurements made at the lowest, highest, and one or more intermediate ringing frequencies for the particular ringing type (three intermediate frequencies for "B" type ringers)?

_____ c) Are measurements made at least at the lowest and highest ac voltage at each frequency for the particular ringing type?

_____ d) Are measurements in "10.3.1" and "10.3.2" above also made with the Tip and Ring transposed?

10.4 *REN Calculation*

_____ a) In calculating DC REN are data from the dc resistance measurements (without applied ac) used?

10.5 *DID Signaling and OPS Ringing*

_____ a) Is the ringing "load" selected to simulate the PBX's maximum number of stations as specified by the PBX manufacturer?

10.6 *Message Registration*

_____ a) Are resistance measurements made from Tip to Ground to Ring to Ground for both polarities?

10.7 *Voiceband Private Lines*

_____ a) Are measurements made at least at five voltages from 10 V to 200 V?

_____ b) Are measurements made for both polarities?

10.8 *Make Busy*

_____ a) Is the EUT evaluated to determine that it does not go off-hook for purposes other than initiating or receiving a call?

11 BILLING PROTECTION

11.1 intentionally left blank

11.2 *Call Duration for Registered Terminal Equipment for Data Applications*

_____ a) Can the capabilities of the digital sampling oscilloscope used for making these measurements be demonstrated?

_____ b) Can the identification of any allowable signals appearing before two seconds of off-hook time be demonstrated?

11.3 *On-hook Signal Requirements*

_____ a) When measuring the output signal power is the EUT placed in all of its normal inactive states, such as its various "housekeeping" routines, if any?

11.4 intentionally left blank

11.5 *Signaling Interference*

_____ a) Do the 800 Hz to 2450 Hz and 2450 Hz to 2750 Hz bandpass filters have the following characteristics: input impedance ≥100 kOhms; cut-off frequencies at the 3 dB attenuation pints; and out-of-band rolloff ≥24 per octave?

11.6 intentionally left blank

12 HEARING AID COMPATIBILITY

_____ a) Can evidence of the Helmholtz coil calibration of the probe coils be produced?

_____ b) Are any correction factors resulting from the calibrations applied to the measurements?

_____ c) Does the HAC test fixture permit the proper coupling and orientation of the EUT's receiver to make measurements as prescribed in Part 68 (and EIA RS-504-1983)?

13 DIGITAL TERMINAL EQUIPMENT

13.1 *Subrate Pulse Repetition Rate*

_____ a) Is test performed for each of the data rates at which the EUT is capable of operating?

13.2 *Subrate Pulse Template*

_____ a) Is the data generator used in this test capable of causing the EUT to transmit a signal which will allow the capture of a single pulse, i.e., with a minimum of one leading and one trailing zero?

_____ b) Is the lab equipped with the proper template to verify the results of this measurement?

13.3 *Subrate Average Power*

_____ a) Is measurement made at all of the transmission rates?

_____ b) Are the measurements made with 135-Ohm termination and, if not, is correction applied to the results?

_____ c) Is averaging done over at least 3 seconds?

13.4 *Subrate Analog Content*

_____ a) Is power measured using a 600-Ohm termination?

_____ b) Is power averaged over 3 seconds?

13.5 *Subrate Signaling Interference*

_____ a) Is the test performed for each of the EUT's generated signals?

13.6 *Subrate On-hook Level*

_____ a) Are readings taken in dBm with respect to 600 Ohms?

13.7 *1.544 Mb/s Pulse Repetition Rate*

_____ a) Are both the transmit and receive pairs terminated properly in 100 Ohms?

13.8 *1.544 Mb/s Pulse Template*

_____ a) Is the data generator used in this test capable of causing the EUT to transmit a signal which will allow the capture of a single pulse, i.e., with a minimum of one leading and one trailing zero?

_____ b) Is the lab equipped with proper templates to verify the results of all three of these measurements?

13.9 *1.544 Mb/s Output Power*

_____ a) Are output power measurements made for all three pulse options, i.e., 0 dB, 7.5 dB and 15 dB loss at 772 kHz?

_____ b) If an "all ones" signal is not possible, are the necessary corrections made to the data based on the pulse density used?

13.10 *1.544 Mb/s Encoded Analog Content*

_____ a) Is power measured using a 600-Ohm termination?

_____ b) Is power averaged over 3 seconds?

13.11 *1.544 Mb/s Signaling Interference*

_____ a) Is the test performed for each of the EUT's generated signals?

13.12 *1.544 Mb/s On-hook Level*

_____ a) Are readings taken in dBm with respect to 600 Ohms?

13.13 *Signaling Duration*

_____ a) is the minimum five-second interval measured as opposed to estimated?

13.14 intentionally left blank

14 MISCELLANEOUS

14.1 *Limitations on Automatic Redialling*

_____ a) Is the person responsible for testing versed in the details of the limitations such as the number of times redialling is allowed and which types of equipment are exempt from this requirement?

15 intentionally left blank

16 FAILURE ANALYSIS

16.1 Failure Analysis Program

_____ a) Does the laboratory have a failure analysis program as suggested in Appendix F of the Form 730 Application Guide (12/7/92 version and later)?

_____ b) Are records of test failures kept for statistical studies? Have statistical studies been conducted?

_____ c) Are the laboratory failure analysis program and records adequate?

NVLAP LAB CODE:

FCC PART 68 CHECKLIST - COMMENTS AND DEFICIENCIES

Instructions to the Assessor: Use this sheet to document comments and deficiencies. For each, identify the appropriate item number from the checklist. Identify comments with a "C" and deficiencies with an "X". If additional space is needed, make copies of this page (or use additional blank sheets).

ITEM NUMBER	COMMENTS AND/OR DEFICIENCIES

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ITEM NUMBER	COMMENTS AND/OR DEFICIENCIES

ET 95-19

NVLAP LAB CODE: [redacted]

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

National Voluntary Laboratory Accreditation Program (NVLAP)
for
Electromagnetic Compatibility and Telecommunications Testing

ON-SITE CHECKLIST FOR FACILITY LISTING WITH FCC

This checklist is designed for use by a NVLAP Technical Expert(s) (TE) during the conduct of an on-site assessment for initial or renewal of accreditation. The checklist contains items from the NVLAP Program Handbook(s), 7 CFR Part 285 - NVLAP Procedures, 47 CFR - Telecommunications - Part 2.948, ANSI C63, and other technical references. This checklist will be used in conjunction with other NVLAP checklists.

The completed checklist becomes a part of the laboratory ON-SITE ASSESSMENT REPORT which is used in the evaluation of the laboratory for granting or renewal of accreditation. Deficiencies noted in this checklist must be resolved in accordance with the NVLAP Procedures. Comments not specified as deficiencies may be directed to the laboratory by the TE.

Laboratory Name _____

NVLAP Technical Expert(s) _____

On-Site Dates _____

Facility and Test Site(s) Assessed _____

_____

Instructions to Laboratory

Respond in writing within 30 days of the date of this report, addressing all deficiencies documented by the assessor. Each deficiency must be referenced, in your response, by number as it is listed in the report.

This on-site assessment report conveys the opinion of the assessor as a single representative of NVLAP. The final evaluation of your laboratory for the purpose of recommending approval or denial of accreditation will be conducted by NIST evaluators who will review this report, the written information submitted by you, and results of any required proficiency testing. You must respond to this report by identifying the actions you have taken, or plan to take, to correct the deficiencies identified. Respond in detail so that an accurate evaluation can be completed. Failure to respond may delay an accreditation decision. Questions concerning this report should be directed to NVLAP.

The assessor has discussed the contents of this report with members of the laboratory management who agree to respond in writing to NIST, regarding resolution or correction of any deficiencies noted, within 30 days of the date of this report.

_____

Signature of Authorized Representative or designee | Printed Name | Date

NVLAP LAB CODE: [redacted]

National Voluntary Laboratory Accreditation Program (NVLAP)
for
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ON-SITE CHECKLIST FOR FACILITY LISTING WITH FCC

Summary of the NVLAP requirements for measurement facilities:

_____ The laboratory must meet all NVLAP general criteria as stated in NIST Handbook 150.

_____ The laboratory must meet all NVLAP technical criteria as stated in the program specific handbook.

_____ Laboratories shall keep at their facility appropriate, up-to-date files as part of their documentation system. The files must be covered by the laboratory quality system.

_____ Appropriate files shall be available upon request both to NVLAP and the Federal Communications Commission (FCC) per the FCC requirements for facility listing.

_____ The files shall be available for review by the NVLAP on-site assessor(s) during regular on-site or monitoring visits.

_____ Each radiated and line conducted emissions test site (including open area, anechoic chambers, and weather protected sites) that is used for FCC equipment authorization testing shall be included in the documentation.

_____ Antennas must be calibrated per ANSI C63.4 section 4.4.1 and ANSI C63.5. "Traceability is the property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM 1993)

Instructions to the Assessor: This checklist addresses specific criteria relating to FCC facility listing requirements.

Place an "X" beside any of the following items which represent a NVLAP deficiency. Place a "C" beside each item on which you are commenting for other reasons. Record the item number and your written deficiency explanations and/or comments in this list or on the comment sheet(s).

Place a check beside all other items you observed or verified at the laboratory. All items must be marked.

National Voluntary Laboratory Accreditation Program (NVLAP)
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ON-SITE CHECKLIST FOR FACILITY LISTING WITH FCC

_____ (a) Each party making measurements of equipment that is subject to an FCC equipment authorization under part 15 or part 18 of 47 CFR chapter I, regardless of whether the measurements are filed with the FCC or kept on file by the party responsible for compliance of equipment marketed within the U.S. or its possessions, shall compile a description of the measurement facilities employed.

_____ Laboratory procedures for compiling the required description and files are documented in the laboratory procedures manual.

_____ The laboratory has at its facility appropriate, up-to-date files as part of its documentation system. The process and records must be covered by the laboratory quality system.

_____ (1) If the measured equipment is subject to the verification procedure, the description of the measurement facilities shall be retained by the party responsible for verification of the equipment.

_____ Does this laboratory retain such information?

_____ (i) If the equipment is verified through measurements performed by an independent laboratory, it is acceptable for the party responsible for verification of the equipment to rely upon the description of the measurement facilities retained by or placed on file with the FCC by that laboratory. In this situation, the party responsible for verification of the equipment is not required to retain a duplicate copy of the description of the measurement facilities.

_____ (ii) If the equipment is verified based on measurements performed at the installation site of the equipment, no specific site calibration data is required. It is acceptable to retain the description of the measurement facilities at the site at which the measurements were performed.

_____ (2) If the equipment is to be authorized by the FCC under the certification or the notification procedure, the description of the measurement facilities shall be filed with the FCC Laboratory in Columbia, Maryland. The data describing the measurement facilities need only be filed once but must be updated as changes are made to the measurement facilities or as otherwise described in this Section. At least every three years, the organization responsible for filing the data with the FCC shall certify that the data on file is current.

_____ (b) The description specified in (a) above shall contain the following information for each open area test site or equivalent used by the laboratory:

_____ (1) Location of the test site.

_____ (2) Physical description of the test site accompanied by photographs 8" x 10" in size. Smaller photographs may be used if they clearly show the details of the test site and are mounted on full size sheets of paper.

_____ (3) A drawing showing the dimensions of the site, physical layout of all supporting structures, and all structures within 5 times the distance between the measuring antenna and the device being measured.

_____ (4) Description of structures used to support the device being measured and the test instrumentation.

_____ (5) List of measuring equipment used. Include spectrum analyzer/receiver, coaxial cable, and antenna(s).

_____ (6) Information concerning the calibration of the measuring equipment, i.e., the date the equipment was last calibrated and how often the equipment is calibrated.

_____ (7) If desired, a statement as to whether the test site is available to do measurement services for the public on a fee basis.

_____ (8) Site attenuation data including actual measurements, antenna factors, calculations, mutual impedance correction factors, tabulations and plots.

For alternate test sites (including anechoic chambers and weather protected sites) see ANSI C63.4. For open area test sites that have modifications e.g.: lighting; fire detection; proximity to metal surfaces, metal objects, cars; etc. alternate test site measurements may be required.

_____ Horizontal polarization (Per FCC OET 55 and/or ANSI C63.4)

_____ Vertical polarization (Per ANSI C63.4)

_____ (i) For a measurement facility that will be used for testing radiated emissions from a digital device on or after May 1, 1994, or for testing intentional and other unintentional radiators authorized under Part 15 of the rules on or after June 1, 1995, the site attenuation data shall be taken pursuant to the procedures contained in Sections 5.4.6 through 5.5 of the following procedure: American National Standards Institute (ANSI) C63.4-1992, entitled "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz," published by the Institute of Electrical and Electronics Engineers, Inc. on July 17, 1992 as document number SH15180.

_____ (ii) For a measurement facility that will be used for testing radiated emissions from a digital device prior to May 1, 1994, or from intentional and other unintentional radiators authorized under Part 15 prior to June 1, 1995, or for devices authorized under Part 18 of the rules, the site attenuation data shall be taken pursuant to either ANSI C63.4-1992 Sections 5.4.6 through 5.5 or FCC/OET Bulletin 55.

_____ The laboratory has copies, readily available, of all applicable reference documents, including; ANSI C63.4, ANSI C63.5, ANSI C63.7, and FCC/OET Bulletin 55.

_____ (iii) This requirement does not apply to equipment that is not measured on an open field test site or equivalent (e.g. microwave sites are not included).

_____ (9) A description of the types of equipment intended to be measured or other information regarding the types of measurements that would be performed at test facility.

The capabilities of the laboratory must be documented and laboratory policy must state that the laboratories capabilities will not be exceeded.

Exceptions to standard or accepted test procedures must be documented.

(c) Has the laboratory indicated to the FCC that it will perform measurement services for the public on a fee basis?

_____ (d) Have changes to sites, equipment, calibrations, etc. required in (b) above been made according to written laboratory policies and procedures and have the changes been appropriately documented?

_____ Has the laboratory certified to the FCC, at least every three years, that the data on file is current? Has this certification been documented?

_____ (e) Assessment of the calibration of test equipment is covered under other sections of the NVLAP On-Site Checklist series.

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NVLAP LAB CODE: [ ]

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Item No.	*Comments and/or Deficiencies*